

Application No. 10/645,347
Filed: August 21, 2003
TC Art Unit: 1725
Confirmation No.: 6740

REMARKS

Claims 1-2 have been rejected under 35 U.S.C. § 102(e) over Kawamura et al. Claim 1 as amended recites a composite metal product of a carbon nano material consisting of a carbon nano tube. See Applicants' specification at, for example, page 4, lines 15-16, for support. Kawamura discloses a composite metal product of carbon, particularly a graphite, and a low melting metal. However, Kawamura does not disclose a carbon nano tube. Graphite consists of a layered lattice structure, and carbon nano tubes consist of a tube structure. Thus, carbon nano tubes are different from graphite. Accordingly, claims 1 and 2 are believed to be patentable thereover.

Claim 3 has been rejected under § 103(a) over Kawamura et al. in view of Dwivedi et al. Claim 3 as amended also recites a carbon nano tube. Accordingly, this claim is believed to be patentable for the reasons set forth above with respect to claim 1.

In addition, Kawamura does not teach a preliminary molded member for a product by injection molding. In Kawamura, a carbon-based metal composite material is produced by impregnating a pre-heated carbon-formed body with a molten metal at a pressure of at least 200 kg per cm^2 of the plunger cross-sectional area. (Kawamura, col. 8, lines 5-8) The impregnation of the molten metal in the method of Kawamura is characterized by the use of the plunger for a squeeze casting of a pressure application of a standard press to inject the molten metal into the carbon-formed body placed inside the mold and directly apply pressure thereto. (Kawamura, col. 8, lines 16-21) After a period of time has elapsed, the whole mass of metal is removed from the mold and cut

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to obtain a metal-impregnated carbon-based composite material.
(Kawamura, col. 8, lines 45-48)

In the method of the present invention, the preliminarily molded member is shaped for a product. See Applicants' specification at, for example, Fig. 1 and page 4, line 20. That is, the preliminarily molded member has the same shape as the product (the composite metal product), and metal impregnation is carried out by injecting a molten low melting point metal into a cavity of a mold for this product. Thus, the cavity, in which the preliminarily molded member is inserted, has the same shape as the product. Since the preliminarily molded member and the cavity have the same shape as the composite metal product, there is no need to cut the metal impregnated material to obtain the intended product.

Thus, even if Kawamura were modified in view of Dwivedi et al., the presently claimed invention would not result. Claim 3 is accordingly believed to be patentable thereover.

Claim 4 has been rejected under § 103(a) over Kawamura et al. in view of Dwivedi et al., and further in view of Koide et al. Claim 4 is believed to be patentable for the reasons set forth above with respect to claim 3. Accordingly, no further comment thereon is believed necessary at this time.

Claim 4 has been amended for clarity. In claim 4, carbon nano material and resin binder are mixed and plasticized in a plasticizing device, and this plasticized material, i.e., the plasticized mixture of carbon nano material and resin binder, is injected into a mold in an injection device. Claim 4 as amended clarifies the recitation of the plasticized material.

In view of the above amendments and remarks, all claims are believed to be in condition for allowance, and reconsideration and

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indication thereof are respectfully requested. The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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